

epithalami, just as in the Ganoids. Thus, in cerebral structure, as in other respects, the Ganoids and the Teleosteans are as closely related to one another as they are different from the Selachians.

With respect to the chiasma of the optic nerves, the exact nature of that structure has not yet been properly elucidated either in the Selachians or in the Ganoids. But, whatever may come of such an investigation, the establishment of the existence of a true chiasma in the Ganoids, and of its absence in Teleosteans, can have but little bearing on the question of their affinities, since Wiedersheim has shown that a simple decussation of the fibres of the optic nerves, as in ordinary Teleosteans, takes place in many Lizards.

I am no great believer in the permanent value of sharply drawn distinctions of any kind in zoology; but, assuredly, if there is any such distinction to be drawn on the basis of our present knowledge among the higher fishes, it is between the Ganoids and the Plagiostomes, and not between the Ganoids and the Teleosteans.

At page 373 of Dr. Günther's work 'On the Study of Fishes,' published in 1880, he affirms broadly and without the least qualification that, though "we find not a few analogous forms in both series" [namely the Ganoidei and the Teleostei], yet "there is no direct genetic relation between those fishes, as some naturalists were inclined to believe." I imagine that I am included among the naturalists thus summarily disposed of, since, in 1876, I expressed the opinion that "in *Amia* there is an even closer approximation between the Ganoids and the Teleosteans than can at present be shown to exist between any Ganoids and the Dipnoi; while the differences between the Dipnoi and the Chimæroidei and between the Chimæroidei and the Plagiostomi respectively are not less than those between the Ganoids and the Dipnoi"¹; and I objected on these grounds to the adoption of the group of "Palæichthyes" proposed by Dr. Günther.

When objections are ignored without being refuted, or even discussed, I suppose that the best way is to emphasize them afresh; and I do this, on the present occasion, by expressing my conviction, first, that there are no two large groups of animals for which the evidence of a "direct genetic connexion" is better than in the case of the Ganoids and the Teleosteans; and, secondly, that the proposal to separate the Elasmobranchii, Ganoidei, and Dipnoi of Müller into a group apart from, and equivalent to, the Teleostei appears to me to be inconsistent with the plainest anatomical relations of these fishes.

2. Description of a new Species of *Bufo* from Japan.

By G. A. BOULENGER, F.Z.S.

[Received February 26, 1883.]

(Plate XXIII.)

I have hesitated whether to consider the following form a distinct species or a variety of *Bufo vulgaris*. After long consideration, I

¹ "On *Ceratodus forsteri*," P. Z. S. 1876.

adopt the former view, having little doubt that it is outside the range of variation of even so variable a species as *Bufo vulgaris*. I will call it

BUFO FORMOSUS, sp. n. (Plate XXIII.)

In its general characters this species agrees with *Bufo vulgaris*, especially the Japanese form, which it resembles in the large size, the larger head, the perfectly distinct tympanum, and the black markings. But it is distinguished by the following characters:—

The tympanum, which is perfectly exposed and circular, is quite as large as the eye, and measures three fourths the greatest diameter of the orbit. The parotoids are much narrower, their width being contained three times and a half in their length. The hind limb is longer; if it is carried forwards along the body, the metatarsal tubercles reach the centre of the eye in the female, the anterior corner of the same in the male. The fingers and toes are more elongate, and the web between the latter shorter (the specimens were captured during the breeding-season, as is indicated by the male's digital asperities). The first finger being laid against the second, does not extend quite so far as the latter; in *B. vulgaris* it is the reverse, the first finger extending slightly beyond the second.

Upper surfaces brown, washed with carmine; a black lateral band as in *B. vulgaris* of Japan, bordered above by a yellowish streak; lower surfaces yellowish, the belly and the lower surface of the limbs largely marbled with black; a black line bordering the lower lip. This line is constant in the Japanese specimens of *B. vulgaris*, absent in the continental specimens.

Two specimens, male and female, were collected at Yokohama during the expedition of H.M.S. 'Challenger.'

The following dimensions should be compared with the table given in my monograph of the Palæarctic and Æthiopian species of *Bufo* (P. Z. S. 1880, p. 570').

	♂. millim.	♀. millim.
From snout to vent	125	112
Length of head	35	31
Breadth of head	51	44
From eye to nostril	8	8
From eye to tip of snout	18	15
Greatest diameter of orbit	12	11
Interorbital space	13	12
Diameter of tympanum	9	8
Length of parotoids	28	21
Breadth of parotoids	8	6
Body	90	81
Fore limb	87	80
Hind limb	172	142
Tibia	47	40

¹ Column *f*, "length of head 48 millim." is a misprint for "38 millim."